perspective causes—viz. by the points of the streamers being further distant than the bases. It is the same perspective peculiarity which causes the lamps in a street or the trees in an avenue to appear to meet in the distance.

"The centre of the corona is sometimes dark—that is to say, the sky is seen between the streamers, at other times the central part is filled with luminous matter.

"It is not only the streamers which contribute to form the corona; on the contrary, all the forms of the aurora lend their beauty to produce this magnificent display. If to this is added that the Aurora Borealis in such moments develops its greatest strength, richest colour, and most intense light, it will be understood that the corona is that form of the phenomenon which possesses the greatest magnificence and most striking beauty."

With regard to the height of the aurora, a preliminary examination of the observations made in the plane Koutokæino-Bossekop gives from 50 to 100 miles, an average of 18 measurements giving 70·2 miles or 113 kilometres.

From this long article on auroræ, the reader must not think that our author is exclusively occupied with them. His two volumes are admirable examples of what books of travel should be, and it falls to the lot of few travellers to have such an interesting region to explore, or to have such an important piece of scientific work to accomplish.

THE BRITISH ASSOCIATION

OUR readers are aware that at the approaching meeting of the British Association it has been arranged to have discussions in Section A on kinetic theories of gases and on standards of white light. Prof. Crum Brown has consented to open the discussion on the kinetic theories, and has drawn up the following short abstract of points to which he proposes to allude. It would be convenient if persons desiring to take part in the discussion would forward their names, with, if possible, a short abstract, to the recorder, Prof. W. M. Hicks, Firth College, Sheffield.

Difficulties connected with the Dynamical Theory of Gases. Prof. Crum Brown.

The Dynamical Theory of Gases appears at first sight to furnish a very complete explanation of all the properties of gases, both physical and chemical. When, however, we come to details, difficulties and apparent contradictions make their appearance. These difficulties have been pointed out from time to time, and some attempts have been made to show that they are not really fatal to the theory as usually stated; but it may be useful that some of them should be brought at this time before the section and regularly discussed.

I shall here merely mention some of these difficulties, as the explanations which have been given of them will be better supplied by others in the discussion.

1. *The difficulties connected with the doctrine, that energy communicated from without to a gas is equally shared among the whole of the degrees of freedom of the molecules.* This leads to a relation between the numbers of degrees of freedom and the ratio of the specific heat at constant pressure to that at constant volume. This ratio is for mercury gas almost exactly 5:3, from which it would appear that the molecules of mercury gas have not more than three degrees of freedom—in other words, that the whole energy of mercury gas is kinetic energy of translation of the molecules. But even if we assume that the molecules of mercury are spheres, perfectly smooth and perfectly rigid, the fact that mercury vapour has a spectrum points to some form of energy of a vibratory kind. Again, the gases, the molecules of which are supposed to consist of two atoms, have the ratio of the specific heats nearly equal to 7:5 (it seems always to be a little greater than this, which increases the difficulty). This points to five degrees of freedom of the molecule, which would be consistent with the hypothesis that these molecules consist of two smooth, undeformable spheres at a constant distance from each other, the five degrees of freedom being three of translation and two of rotation about two axes, any two at right angles to each other and at right angles to the axis of the molecule, that is, the line joining the centres of the two atoms. But here also we have spectra, and in addition the phenomena of dissociation lead to a belief that the firmness of the union of the two atoms diminishes as temperature rises, and it is difficult to reconcile this with a constant distance of the two atoms from one another in the molecule. Any variation in this distance would be a new degree of freedom in addition to the five allowed by the theory.

All attempts to reconcile chemical action and chemical equilibrium with dynamical conceptions seem to require the assumption of vibrations of the atoms in the molecule, under the influence of forces depending on the distances of the atoms from each other, and perhaps in addition to these, vibrations of the atoms as parts of the molecule, vibrations of the atoms themselves. In molecules, even of a comparatively simple kind, such considerations imply many degrees of freedom, certainly far more than the dynamical theory of gases as usually understood will admit.

2. *Difficulties connected with the doctrine that energy of each kind is distributed among the molecules according to some form of the law of probability.*

This implies that in a gas at any temperature there are molecules in the condition as to energy which is the average condition of the gas at any other temperature. That, for instance, at the ordinary atmospheric temperature there are molecules in the condition which is the average condition at a red heat.

This seems inconsistent with what is usually regarded as true, viz., that there are limiting conditions of temperature and pressures, on the one side of which certain chemical changes occur, while they do not occur at all on the other side. Thus at ordinary atmospheric temperatures and pressures, hydrogen and oxygen show no tendency to combine. At a red heat they combine almost completely. At ordinary temperatures phosphorus combines slowly with oxygen if the pressure of the oxygen is below a certain limit (dependent on the temperature), but apparently not at all if the pressure of the oxygen is above that limit. Many other cases might be mentioned, but these may suffice as instances. It is difficult to understand the existence of such definite sharp limits, if the energy is distributed among the molecules according to any asymptolic law. In such a case the rate of chemical action might be expected to diminish, but not to become zero.

I have brought forward these instances of apparent contradiction between the conclusions of the dynamical theory as usually stated, and observed facts in the hope that they may be cleared up. This may conceivably be done in two ways—either by showing that the facts have not been accurately observed, or that the conclusions have not been legitimately drawn from the theory.

NOTES

THE Iron and Steel Institute holds its summer meeting in Glasgow on September 1–5. The programme includes excursions down the Clyde and a visit to the Forth Bridge Works. The following is the list of papers down for reading:—On the iron trade of Scotland, by Mr. F. J. Rowan, Glasgow; on the rise and progress of the Scotch steel trade, by Mr. James Riley, Glasgow, Member of Council; on the present position and prospects of processes for the recovery of tar and ammonia from blast furnaces, by Mr. Wm. Jones, Langloan Ironworks, N.B.; on the structural features and working of the South Chicago blast furnaces, by Mr, F. W. Gordon, Philadelphia, and Mr.

E. C. Potter, Chicago, U.S.A.; on certain accessory products of the blast furnace, by Mr. T. Blair, Wingerworth Ironworks, Derbyshire; on a new form of cupola furnace, by Mr. James Riley, Glasgow; on a new form of pyrometer, by Mr. A. von Bergen, Middleton Ironworks, Darlington; on the ancient and modern methods of manufacturing tin-plates, by Mr. Philip W. Flower, Melyn Tinworks, Neath; on the manufacture of basic steel on the open hearth, by M. Pourcei, Bilbao, Spain; on the Forth Bridge, by Mr. Benjamin Baker, M.I.C.F., London.

The International Telegraph Conference was opened at Berlin on Monday by Dr. Stephan, German Postmaster-General. No fewer than 33 States and 17 telegraph companies are represented, and about 72 delegates had already assembled to day. Dr. Stephan opened the sitting with an address, in which, in the name of the German Emperor, he bade the delegates welcome, and made some general observations on the rapid development of telegraphic science and communication, as well as on the desirability of placing the advantages of this science still more within the reach of all classes. On the motion of the English delegate, Mr. Patey, Dr. Stephan was elected President of the Conference, which then proceeded to appoint two committees—one for the consideration of tariff questions, the other for matters of technical administration. Dr. Stephan then thanked the Swiss Government for presiding so successfully over the International Telegraph Bureau (of Berne), and the British Government for duties it had undertaken since the last Conference at London (1875). He also adverted to the memory of several deceased members of that Conference, including Sir William Siemens.

Among those on whom the degree of LL.D. was conferred at the recent Graduation ceremonial of Edinburgh University are Prof. John Anderson, M.D., F.R.S., Superintendent of the Imperial Indian Museum of Calcutta, Professor of Comparative Anatomy in the Medical College of Calcutta, Fellow of Calcutta University; Dr. Johann Georg Bühler, Ph.D., C.I.E., Professor of Sanskrit in Vienna University; and M. Antoine d'Abbadie, Member of the Institute of France, well known for his writings in geology, astronomy, and Oriental matters.

On any Tuesday, Thursday, or Saturday, until the end of September, persons of archæological tastes may visit the rooms of the Royal Archæological Institute, Oxford Mansions, near Regent Circus, to see the large and most interesting collection of antiquities which Mr. W. M. Flinders Petrie, working under the auspices of the Egypt Exploration Fund, has discovered at the Nebireh Mound, which is now established to be the site of the famous Greek City of Naucratis, and the cradle of Greek art. The thorough exploration has resulted in laying bare what was the earliest Greek settlement in Egypt, and in bringing to light archæological treasures beyond price. Innumerable objects of purely Greek art, statuettes, terra-cotta figures, painted vases, votive offerings, bronzes, sculptures have been found, together with an immense quantity of pottery in considerable variety. Naucratis was a city of potters, and Athenæus states that her ceramic productions were in great vogue around the shores of the Mediterranean. In the mound which covered the city potsherds were found in well-defined layers of different centuries, susceptible of exact classification, and as such forming an interesting chapter in the history of Greek art. The collection is particularly rich in the archaic variety of white faïence pottery, of which, prior to Mr. Petrie's labours, only three or four pieces were known to exist. He found bowls by the hundred. The connection of Greek pottery with that of Egypt is shown at every step, showing how the one descended by gradual steps from the other. The scaraboei, amulets, pictorial ornaments, deities, tiles, and other articles found in early Greek tombs all around the Mediterranean have been found amid the ruins of Naucratis in the very workshops where they were produced. The sites of several factories were brought to light, each containing many samples of their products. One of these was a Greek manufactory of scarabs for exportation, full of such blunders as foreigners would make in the hieroglyphs. In another part of the city what had evidently been a flourishing iron manufactory was unearthed, where every stage of production was carried on by Greek workmen, for ore, slag, and finished tools have all been found. The tools are principally chisels for working in wood, but there were also an axe, a hoe, a sickle, knives of various kinds, bodkins, and, what is a total novelty in archæological discoveries of this kind, fishhooks. There is satisfactory proof forthcoming that this scene of early Greek iron-working was in full vigour in the sixth century before Christ.

At the monthly meeting of the Entomological Society of London, held on August 5, J. W. Dunning announced that a Royal Charter of Incorporation had been granted to the Society. It bears date July 20, 1885. The Ethnological Society was founded in 1833.

We are glad to know that there is now a chance that the teaching of geography, which has been one of the blots of our ordinary English education from the many colleges downwards, will be put upon a proper scientific basis. At present it is usually made a task for the memory rather than an instrument of education. Messrs. Macmillan, in announcing a new series of Geographical Text Books, have the courage to state that "the first principles of geography, however, cannot be effectively taught from books. They must be enforced practically from familiar local illustrations." In a preliminary volume, therefore, the teacher is taught how to lay a solid geographical basis, founded upon the pupil's own personal experience. Throughout the series the fundamental idea will be to present the essential facts in such a way as will show their relationship to each other. The physical features will be connected with the climatology of a country, and both will be shown to affect the distribution of life, while the bearing of all these influences upon human history and commercial progress will be constantly kept in view. The boundaries of parishes and countries, the positions of towns and the diffusion of population, will be linked with their geographical explanation. A knowledge of the topography of a country, and of the local names by which it is expressed, will be shown to be the necessary accompaniment of an adequate knowledge of the history of the inhabitants. In short, it should be a constant aim to represent geography not as a series of numerical tables or a string of disconnected facts, but as a luminous description of the earth and its inhabitants, and of the causes that regulate the contrasts of scenery, climate, and life. Messrs. Macmillan have placed the editorship of the series in the hands of Mr. Archibald Geikie, F.R.S., Director-General of the Geological Survey of the United Kingdom, and have already secured the co-operation of Mr. H. W. Bates, F.R.S., Mr. Clements R. Markham, C.B., F.R.S., Mr. John Murray, Ph.D., F.R.S.E., Mr. E. B. Tylor, D.C.L., F.R.S., Mr. A. R. Wallace, LL.D., F.R.G.S., Rev. Edmond Warre, D.D., Head Master of Eton, Rev. J. E. C. Welldon, M.A., Head Master of Harrow, and others.

It has been decided to withhold from publication the Report of Drs. Klein and Gibbes upon Dr. Koch's discoveries in relation to the germ theory of cholera, until the conclusions of a committee appointed by the Secretary of State for India with reference to that Report are also ready.

We have received from Mr. Lawton, of Hull, a communication with regard to preventing collisions with icebergs. He has had frequent opportunity of noting the phenomena of echoes by means of steam-whistles, guns, fireworks, &c., and has received distinct echoes from various surfaces, some of which were not very promising. The sails of vessels and an approaching tug-boat, referred to by Prof. Graham Bell, are additional sources of sound-reflection, but Mr. Lawton thinks that the echo in the case of the latter must have come from some other surface than the bows of the boat, which, unless very bluff or square, would have a tendency to reflect the sound at right angles. If it be true that in Atlantic voyages the sound of the steam-whistle is echoed back by the fog itself, then, Mr. Lawton thinks, the echo from an iceberg enveloped in the fog would be much sharper, more abrupt, and easily distinguished from that returned by the fog, which, from its varying density and elasticity, would more resemble a prolonged rumble. The importance of this subject, the number of lives and amount of property at stake would point to the importance of having every reasonable theory tested by those most interested—viz. shipping companies, captains of steamers and sailing vessels crossing the Atlantic and those going to Australian and New Zealand by the Cape. In the present case this can be very easily done by means of the steam-whistle, ship's bell, guns, &c., in broad daylight near an iceberg; the circumstances, such as its size, bearing, and distance, the direction and force of the wind; and then it should be noted whether an echo is perceptible or not. Mr. Lawton appears to have gone to some trouble in bringing the subject to the notice of shipping companies concerned, and of describing the method of carrying out the few simple experiments needed to demonstrate the value of his theory, but adequate attention does not appear to have been given to his suggestions. We give them in a brief form here, in the hope that they may be fairly tested in the presence of an iceberg in daylight in such a manner as to enable shipmasters to estimate the practicability of the theory. He found that, during artillery practice near Hull, the opposite Lincolnshire coast, two miles off, returned echoes. There are no objects of greater height than a few cottages there, and it occurred to him the phenomenon of echoes might be utilised by vessels in iceberg regions with more safety than the temperature test, especially if the wind and current be from the ship towards the berg. Most icebergs will present numerous reflecting surfaces at right angles to any passing ship, and it is anticipated that these surfaces would echo a short but full blast of the steam-whistle at a sufficient distance, say one or two miles, for the ship's course to be slightly altered in case the berg was right ahead. If such a blast is blown in daylight in the presence of a berg for purposes of experiment, the distance and bearing of the berg, and the force and direction of the wind should be noted. If at the time a high sea or swell prevailed, the whistle should be blown when the ship is on the crest of the wave. As fog is a better conductor of sound than dry air, it is when an iceberg is enveloped in fog, as is often the case on the banks of Newfoundland, that Mr. Lawton's theory, if true, would be of any value, as it could not only indicate the distance of the berg approximately, but also its bearing from the ship.

THE Sadlers' Company have established four studentships, each of the annual value of 30*l.*, and tenable for two years, at the Finsbury Technical College of the City and Guilds of London Institute. The studentships will be competed for at the entrance examination, to be held at the college on October 1, and are open to pupils above fourteen years of age who are attending or who have attended any public elementary school in the United Kingdom. The Court of the Salters' Company has agreed to raise their annual subscription to the Technical Institute from 525*l.* to 1000*l.*

DR. TRIMEN, director of the Royal Botanical Gardens of Ceylon, has just published a systematic catalogue of the flowering plants and ferns indigenous to or growing in Ceylon. The list gives the botanical, Singhalese, and Tamil names, and is a complete index to Thwaites's "Enumeratio Plantarum Zeylaniæ," but it differs from the latter work in the sequence of the families or natural orders. In addition to the flowering plants and ferns, Dr. Trimen has added five natural orders—viz. Rhizocarpeæ, Lycopodiaceæ, Isoeteæ, Selaginellaceæ, and Characeæ. The catalogue includes 156 natural orders, 1071 genera, and 3249 regular species, with 408 varieties, some of which may prove to be distinct species. The catalogue is issued as a number of the *Journal* of the Ceylon Branch of the Royal Asiatic Society.

THE weather in Southern Norway in June has been very remarkable, and we must go back to the year 1869 to find anything similar. The weather, early in the month, was very cold, the average being only 56°·5 F., while on the 11th the temperature fell to 35°·8 F., a temperature which has not before been registered in Christiania in June, at all events not since 1867. Towards the end of the month the temperature in Christiania was abnormally high, reaching, on the 28th, 79°·3 F. in the shade. The rainfall was only half of the normal quantity. As well in May as June, the weather was below the average for the whole country. At Röraas the temperature fell on June 2 to 26°·6. The information received of the weather in the north of Norway to the middle of July shows that the weather had till then been very cold, the highest temperature being only 44°·6 to 46°·8 F. in the day and below freezing-point at night. It is popularly supposed that this is due to the enormous ice masses which have this summer descended from the Polar regions on the American side right into the Gulf Stream, which has thereby become greatly cooled, a circumstance immensely influencing the weather in Norway. Seal-hunters returning to Tromsö from the White Sea and adjacent waters report that large masses of drift-ice are in motion towards the Norwegian shores; but there are as yet no reliable news from the Spitzbergen seas. On the other hand, we learn from captains who have returned from seal hunting on the east coast of Greenland and the sea north of Iceland that hardly any were caught, owing to the enormous ice-masses which are descending along the east coast of Greenland this summer, greatly in excess of previous years. It may be remembered that last year the reverse was the case here. Lieutenant Holm, who has been wintering on the east coast, reported that the sea was very free from ice even at the troublesome glacial promontory of Tuisortok, which has only once before been passed by Europeans, viz., Graah. It seems indeed that abnormal conditions prevail this summer throughout the Polar seas, and it will be of interest to learn what the state of the ice actually is north and north-east of Spitzbergen.

A VERY interesting exhibit at the Inventions Exhibition is that of "Brin Frères" for the illustration of their method of extracting oxygen and nitrogen from atmospheric air by the agency of barium oxide and peroxide. A description of the process is given in a small pamphlet, but the English requires a little correction in places to be clearly understandable. The process of oxygen extraction by means of baryta is now very old, but has never yet been made real practical use of, the baryta becoming inactive after some time. This is no doubt due to the absorption of carbonic acid by the baryta from the air. In this process air freed from carbonic acid and water by caustic soda is passed over barium oxide heated in iron retorts to a temperature not exceeding 600° C. The temperature is regulated by a pyrometer which regulates at the same time the supply of gas to the furnace. Under these conditions the oxygen of the air is absorbed by the baryta, peroxide of barium being formed. The nitrogen, which appears to be very pure, is collected separately for use in the production of ammonia. On heating the peroxide of barium to full redness pure oxygen is given off. At this stage of the process the retorts are evacuated by a powerful pump, so that the operation takes place in a vacuum or nearly so. The operations are continuous, and as long as the baryta is kept anhydrous and free from carbonic acid the same quantity will apparently last an indefinite time. The most interesting and perhaps the most useful part of this invention, or application, is the production of ammonia by a very direct process. The nitrogen obtained as above is passed over a mixture of baryta with carbon—charcoal—heated to some unknown temperature, about 300° C., certainly not higher. It is necessary, however, that the nitrogen be moist, a condition which is attained by passing it through water before it comes in contact with the mixture of baryta and charcoal. The product is really a carbonate of ammonia and not free ammonia, the water becoming decomposed under the conditions named, its hydrogen combining with the nitrogen and its oxygen forming carbonic acid. The ammonium compound seems to be formed in considerable amount, and the process should, when carried out on a large scale, be a valuable one.

A USEFUL summary of anthropological work accomplished during the year 1884 has just been issued by Prof. O. T. Mason, curator of the ethnological department, National Museum, Washington. Besides a copious bibliography of the subject, special notices and even extracts are given of the more important papers on ethnology, archæology, and other branches of anthropology that have appeared in the scientific periodicals of Europe and America. Thus detailed reference is made to the work of the British Association Anthropometrical Committee; to Prof. W. H. Flower's paper in the *Journal* of the Anthropological Institute on the size of the teeth as a racial characteristic; to Prof. A. H. Keane's ethnology of Egyptian Sudan, contributed to NATURE; to E. F. im Thurn's articles in *Timheri* on the natives of British Guiana; to Dr. Charles Rau's paper on "Prehistoric Fishing," in vol. xxv. of the Smithsonian Contributions to Knowledge; and to A. Chavero's great work on "Mexico à traves los Siglos," the first volume of which is completed, bringing the subject down to the arrival of the Spaniards. It is satisfactory to notice that the Philadelphia Academy of Sciences has created a chair of ethnology and archæology, to which Dr. Daniel G. Brinton has been appointed. The field of anthropology is now so extensively cultivated in the Old and New World that annual summaries of this sort have become indispensable.

THE Swedish Professor Warming has proceeded to Finmarken in order to study the Arctic flora on the Norwegian coast.

ON July 20 and 21 two terrible cyclones passed over the central part of Sweden, followed by rain and lightning. In several places hundreds of old trees were uprooted, and a clear road made in forests upwards of fifty yards wide. In one place a large wooden snowplough lying by the road was smashed to atoms. Fortunately no one was injured.

AT the University examination just concluded in Copenhagen there were seven lady candidates, all of whom passed, four gaining *precæteris,* two *laudabilis,* and one *haud illaudabilis.* Five of these ladies took the mathematics and natural science degrees, and only two the philological.

DURING the last two years several Celtic tumuli in the district of Geinberg, in Upper Austria, have been opened and found to contain valuable relics of prehistoric times. A few days ago a similar tumulus was discovered near Mattighofen, in the same neighbourhood, and among its contents was found a diadem of pure gold, richly carved in the well-known style of old Celtic art.

MR. DAVID DOUGLAS, of Edinburgh, has issued a new edition of the late Charles St. John's "Tour in Sutherlandshire," a fitting companion to the author's well-known "Wild Sports and Natural History of the Highlands." There is an interesting sketch of the author's life by his son, and a long appendix on the fauna of Sutherlandshire, by Mr. J. A. Harvie-Brown and Mr. S. E. Buckley.

MESSRS. CASSELL & CO. have issued the second part of vol. iv. of their "Encyclopædic Dictionary," extending from "Interlink" to "Melyris." As there is no editor's name on the title-page, we presume that Mr. Robert Hunter, who devised the work, and edited the early parts, is not now connected with it. A work of such minuteness as this ought to have had "Laramie" as a well-known geological term.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus* ♂) from India, presented by Mr. S. G. Coles; a Persian Gazelle (*Gazella subgutterosa* ♂) from Persia, presented by Mr. John Stanley Cater; two Madagascar Porphyrios (*Porphyrio madagascariensis*) from the Gold Coast, West Africa, presented by Mr. E. North Newenham; a Cockateel (*Calopsitta novæ-hollandiæ*) from Australia, presented by Mr. J. Ward; four Martinican Doves (*Zenaida martinicana*), a Moustache Ground Dove (*Geotrygon mystacea*), five Dominican Kestrels (*Tinnunculus dominicensis*), a Violaceus Night Heron (*Nycticorax violaceus*), two —— Colins (*Ortyx* —— ♂ ♂) from St. Kitt's, West Indies, presented by Dr. A. Boon, M.R.C.S.; a Common Viper (*Vipera berus*), British, presented by Mr. C. Smallman; a Ring-tailed Coati (*Nasua rufa*) from South America, a Golden-crowned Conure (*Conurus aureus*) from South-East Brazil, a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, deposited.

OUR ASTRONOMICAL COLUMN

OCCULTATIONS OF VESTA.—The minor planet Vesta will be twice occulted by the moon during the next autumn, and though observation of such a phenomenon is more a matter of curiosity than of astronomical utility, we may note the circumstances of each case. The first occultation will take place on October 27; the planet disappears before the moon is above the horizon at Greenwich and reappears at 7h. 50m. at 204°, less than ten minutes after the moon has risen. The second occultation occurs on November 23, the disappearance at 9h. 25m. on an angle of 28°, the reappearance at 9h. 46m. at 347° from north point, reckoning the angles as in the *Nautical Almanac.* At this time Vesta is near aphelion, and therefore will not be brighter than a star of the seventh magnitude.

ANTHELM'S NOVA OF 1670.—Mr. G. Knott has lately had under observation the small star situated close to the position of the star in Vulpecula discovered by Anthelm in June 1670; the star is No. 1814 of the Greenwich Catalogue for 1872. From comparisons made between July 10 and 20, Mr. Knott found it about $10\frac{3}{4}$ or 11 mag., and equal to a star following it 12 seconds, and 4′·5 to the north. It was estimated of the same brightness in August 1872, but a magnitude brighter in April 1852. In 1861, when it was 12m., Mr. Baxendell remarked that "no adjustment of the focus would bring the star up to a sharp point on the night of June 1," and a week earlier Mr. Hind had noticed "a hazy ill-defined appearance about it, which is not perceptible in other stars in the same field of view."

A rigorous reduction of Picard's observations of Anthelm's star, which are printed in Lemonnier's "Histoire Céleste," gives its place for 1670·0—

R.A. 19h. 34m. 5·33s. ... Decl. + 26° 31′ 41″·5,

the right ascension being the more uncertain element and liable to an error of quite two seconds. Bringing this place up to the beginning of 1872·0 we have—

R.A. 19h. 42m. 21·60s. ... Decl. + 26° 59′ 45″·4,

which differs − 3·81s. in right ascension and − 33″·1 in declination from the Greenwich catalogued position.